
ACTUARIAL SECTION

Report of the Actuary on the Retiree Medical Valuation

for Fiscal Year ending June 30, 2007



Cavanaugh Macdonald

CONSULTING, LLC

November 27, 2007

Board of Trustees
Teachers' Retirement System of the State of Kentucky
479 Versailles Road
Frankfort, KY 40601-3800

Members of the Board:

Governmental Accounting Standards Board Statements No. 43 and 45 require actuarial valuations of retiree medical and other post employment benefit plans. This report covers the Medical Insurance Fund only and does not incorporate any OPEB liabilities related to the Life Insurance Fund. We have submitted the results of the annual actuarial valuation prepared as of June 30, 2007. While not verifying the data at source, the actuary performed tests for consistency and reasonability. The valuation indicates that a total annual required contribution of 14.48% of active member payroll payable for the fiscal year ending June 30, 2010 is required to support the benefits of the Kentucky Employees Health Plan and the Medicare Eligible Health Plan ("Plans"). Of this amount, 0.75% of payroll is paid by the members leaving 13.73% as the State contribution. This required State contribution reflects the assets currently held in the Medical Insurance Fund ("Fund"). Since the State contributions are less than the required levels, the discount rate for valuing liabilities has been lowered to 4.5%. The impact of this change is shown on Schedule A. Since the full amount of the Annual Required Contribution (ARC) is not being contributed to the Fund each year, there will be a Net OPEB Obligation (NOO) for the fiscal year ending June 30, 2008.

The valuation takes into account the effect of amendments to the Plans enacted through the 2007 Session of the Legislature. The actuarial accrued liability increased from \$4.3 billion in 2006 to \$5.9 billion in 2007. This increase is primarily due to the change in discount rate from 7.5% in 2006 to 4.5% in 2007.

The promised benefits of the Plans are included in the actuarially calculated contribution rates which are developed using the unit credit actuarial cost method with projected benefits. Market value of plan assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll within a 30-year period, on the assumption that payroll will increase by 4.0% annually. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the Plans and to reasonable expectations of anticipated experience under the Plans and meet the parameters for the disclosures under GASB 43 and 45.

We have prepared the trend information shown in the Schedule of Funding Progress in the Financial Section of the Annual Report and Schedule A and Schedule C shown in the Actuarial Section of the Annual Report.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the medical plans and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the Plans.

In our opinion, if the State contributions are increased to the required levels, the Plans will begin to operate in an actuarially sound basis. Assuming that required contributions to the Fund are made by the employer from year to year in the future at the levels required on the basis of the successive actuarial valuations, the actuarial soundness of the Fund to provide the benefits called for under the Plans will improve.

Respectfully submitted,

Edward A. Macdonald, ASA, FCA, MAAA
President

Alisa Bennett, ASA, EA, FCA, MAAA
Senior Actuary

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Report of Actuary on the Retiree Medical Valuation

Prepared as of June 30, 2007

Section I - Summary of Principal Results

1. For convenience of reference, the principal results of the valuation and a comparison with the results of the previous valuation are summarized below (all dollar amounts are \$1,000's):

Valuation Date	June 30, 2007	June 30, 2006
Number of active members	75,144	73,740
Annual salaries	\$ 2,975,289	\$ 2,859,477
Number of annuitants	31,642	30,977
Number of spouses and beneficiaries*	6,674	6,606
Total	38,316	37,583
Assets		
Market value	\$ 140,772	\$ 131,614
Unfunded actuarial accrued liability	\$ 5,787,989	\$ 4,210,349
Amortization period (years)	30	30
Discount rate	4.5%	7.5%
Contribution for fiscal year ending	June 30, 2010	June 30, 2009
Normal	7.53 %	3.69 %
Accrued liability	6.95	7.62
Total	14.48 %	11.31 %
Member	0.75 %	0.75 %
State (ARC)	13.73	10.56
Total	14.48 %	11.31 %

* Spouses of post-65 retirees, as well as surviving spouses of deceased retirees, pay 100% of the full contribution.



2. The valuation indicates that combined member and State contributions of 14.48% of active member payroll would be sufficient to support the current benefits of the Plans. Comments on the valuation results as of June 30, 2007 are given in Section IV and further discussion of the contribution levels is set out in Sections V and VI.
3. Schedule C of this report outlines the full set of actuarial assumptions and methods employed in the current valuation. Since the previous valuation, the discount rate has been lowered from 7.5% to 4.5% because the full amount of the ARC is not being contributed to the Fund each year. Also since the previous valuation, the medical trend assumption, the spouse participation assumption and the age adjustment methodology have been revised. As a result, the accrued liability increased by \$1,730,574,828 and the Annual Required Contribution increased by \$103,361,336 or 3.48% of payroll.
4. The valuation takes into account the effect of amendments to the Plans enacted through the 2007 Session of the Legislature. The decrease in monthly premium equivalent for Medicare-eligible retirees from \$283 in calendar year 2007 to \$278 in calendar year 2008 as a result of implementing a Fully Insured Medicare-Advantage Plan was recognized in this valuation.
5. All amounts shown prior to the 2005 valuation year were developed and/or reported by the prior actuarial firm.

Section II - MEMBERSHIP DATA

1. Data regarding the membership of the Plans for use as a basis of the valuation were furnished by the Retirement System office. The following table shows the number of active members and their annual salaries as of June 30, 2007 on the basis of which the valuation was prepared.

Group	Number	Annual Salaries (\$1,000)
Full Time	57,192	\$ 2,856,193
Part Time	<u>17,952</u>	<u>119,096</u>
Total	75,144	\$ 2,975,289

The table reflects the active membership for whom complete valuation data was submitted. The results of the valuation were adjusted to take account of inactive members and members for whom incomplete data was submitted.



Section III - ASSETS

1. As of June 30, 2007 the market value of Medical Insurance Fund assets for valuation purposes held by the Plans amounted to \$140,772,234.
2. Schedule B shows the receipts and disbursements for the year preceding the valuation date and a reconciliation of the asset balances for the Medical Insurance Fund.

Section IV - COMMENTS ON VALUATION

1. Schedule A of this report outlines the results of the actuarial valuation and illustrates the benefits of pre-funding the liability. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule C.
2. The valuation shows that the Plans have an actuarial accrued liability of \$3,112,495,249 for benefits expected to be paid on account of the present active membership, based on service to the valuation date. The liability on account of benefits payable to retirees and covered spouses amounts to \$2,816,265,797. The total actuarial accrued liability of the Plans amounts to \$5,928,761,046. Against these liabilities, the Plans have present assets for valuation purposes of \$140,772,234. When this amount is deducted from the actuarial accrued liability of \$5,928,761,046 there remains \$5,787,988,812 as the unfunded actuarial accrued liability.
3. The normal contribution is equal to the actuarial present value of benefits accruing during the current year. The normal contribution is determined to be \$223,929,121, or 7.53% of payroll.

Section V - CONTRIBUTIONS PAYABLE UNDER THE SYSTEM

1. Section 161.420(5) of the Kentucky Revised Statutes provides that members and the State will each contribute 0.75% of salary to the Medical Insurance Fund. We recommend that the State contribution increase to the required amount of 13.73% of payroll.

Required Contribution Rates For Fiscal Year Ending June 30, 2010			
Normal	7.53 %	Member	0.75 %
Accrued liability	<u>6.95</u>	State (ARC)	<u>13.73</u>
Total	14.48 %	Total	14.48 %

2. The valuation indicates that a total normal contribution of 7.53% of payroll is required to meet the cost of benefits currently accruing. The difference between the total contribution and the normal remains to be applied toward the liquidation of the unfunded actuarial accrued liability. This accrued liability payment is 6.95% of payroll.
3. The unfunded actuarial accrued liability amounts to \$5,787,988,812 as of the valuation date. An accrued liability contribution of 6.95% of payroll is sufficient to amortize the unfunded actuarial accrued liability over a 30-year period, based on the assumption that the payroll will increase by 4.0% annually.



Section VI - COMMENTS ON LEVEL OF FUNDING

1. The monthly contribution for retirees to opt into the medical plan is based on years of service at retirement, and can also vary by plan election, Medicare eligibility and tobacco use. Contributions for spouses of retirees is targeted to be 100% of the cost of expected claims. Historically, this target has been achieved for both Medicare and non-Medicare eligible spouses. Current employer contributions have been determined to be insufficient to fund the cost of the benefits to be provided. Benefits and contributions for university and non-university members are identical.
2. The valuation indicates that a significant increase in the employer contribution rate is required to fund the plans in an actuarially sound manner and to ensure the future solvency of the Medical Insurance Fund. A member contribution of 0.75% of payroll together with a state contribution of 13.73% of payroll is required to meet the cost of benefits currently accruing and provide for the amortization of the unfunded actuarial accrued liability over a period of 30 years.

Section VII - ACCOUNTING INFORMATION

1. 1. Governmental Accounting Standards Board Statements 43 and 45 set forth certain items of required supplementary information to be disclosed in the financial statements of the Plans and the employer.

Number of Active and Retired Members as of June 30, 2007	
GROUP	NUMBER
Retirees currently receiving health benefits	31,642
Spouses of retirees currently receiving health benefits	6,674
Active plan members	<u>75,144</u>
Total	113,460



Schedule of Funding Progress (Dollar amount in thousands)						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Projected Unit Credit (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) / c)
6/30/2002	\$ 146,045	\$ 2,806,000	\$ 2,659,955	5.2 %	\$ 2,313,663	115.0%
6/30/2003	165,537	2,886,000	2,720,463	5.7	2,497,731	108.9
6/30/2004	158,862	3,166,568	3,007,706	5.0	2,641,533	113.9
6/30/2005	147,311	4,763,947	4,616,636	3.1	2,703,430	170.8
6/30/2006*	131,614	4,341,963	4,210,349	3.0	2,859,477	147.2
6/30/2007* *	140,772	5,928,761	5,787,989	2.4	2,975,289	194.5

*Reflects change in decremental assumptions and plan design.
 **Reflects change in discount rate to 4.5% and updating medical trend.
 All figures prior to 06/30/2005 were reported by prior actuarial firm.

2. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2007. Additional information as of the latest actuarial valuation follows.

Valuation Date	06/30/2007	Actuarial Assumptions:
Actuarial cost method	Projected unit credit	<u>Investment Rate of Return*</u>
Amortization method	Level percent of pay, open	4.50%
Remaining amortization period	30 years	<u>Healthcare Trend Rate*</u>
Asset valuation method	Market Value of Assets	12.00%
		<u>Ultimate Trend Rate</u>
		5.00%
		<u>Year of Ultimate Trend Rate</u>
		2015
		*Includes Inflation at 4.00%

Schedule of Employer Contributions					
<u>Fiscal Year Ending</u>	<u>Annual Required Contribution (ARC) (a)</u>	<u>Actual Employer Contribution (b)</u>	<u>Retiree Drug Subsidy Contribution (c)</u>	<u>Total Contribution (b) + (c)</u>	<u>Percentage of ARC Contributed [(b) + (c)] / (a)</u>
6/30/2007	\$ 231,473,321	\$ 113,258,761	\$ 10,312,361	\$123,571,122	53.4%

3. The full amount of the Annual Required Contribution (ARC) is not being contributed to the Medical Insurance Fund each year. Therefore, the Annual OPEB Cost (AOC) will be greater than the ARC and there will be a Net OPEB Obligation (NOO) for the fiscal year ending June 30, 2008.



KENTUCKY TEACHERS' RETIREMENT SYSTEM

SCHEDULE A **Benefits of Pre-Funding** **(1,000's)**

	Not Pre-Funding Discount Rate 4.50%	Pre-Funding Discount Rate 7.50%
PAYROLL	\$ 2,975,289	\$ 2,975,289
ACTUARIAL ACCRUED LIABILITY		
Present value of prospective benefits payable in respect of:		
(a) Present active members:	\$ 3,112,495	\$ 1,649,403
(b) Present retired members and covered spouses:	2,816,266	2,005,591
(c) Total actuarial accrued liability	<u>\$ 5,928,761</u>	<u>\$ 3,654,994</u>
PRESENT ASSETS FOR VALUATION PURPOSES	\$ 140,772	\$ 140,772
UNFUNDED ACTUARIAL ACCRUED LIABILITY	\$ 5,787,989	\$ 3,514,222
CONTRIBUTIONS FOR FISCAL YEAR ENDING JUNE 30, 2010:		
Normal	7.53%	3.55%
Accrued Liability	6.95	6.11
Total	<u>14.48%</u>	<u>9.66%</u>
Member	0.75%	0.75%
State (ARC)	13.73	8.91
Total	<u>14.48%</u>	<u>9.66%</u>

SCHEDULE B **MEDICAL INSURANCE FUND** **Summary of Receipts & Disbursements** **(Market Value)**

	<i>For the Year Ending</i> <u>June 30, 2007</u>	<u>June 30, 2006</u>
<u>RECEIPTS FOR THE YEAR</u>		
Contributions		
Members Statutory	\$ 22,398,679	
Payment by Retired Members	30,700,999	
Total Members	<u>\$ 53,099,678</u>	<u>\$ 51,697,167</u>
State Statutory Contributions	\$ 22,273,784	
State Special	5,960,000	
General Fund Surplus (6/2006)	12,000,000	
Allotment from Pension Fund	73,000,000	
Total Employer	<u>\$ 113,233,784</u>	<u>\$ 89,319,498</u>
Grand Total	\$ 166,333,462	\$ 141,016,665
Recovery Income	24,977	118,419
Medicare D Receipts	10,312,361	5,999,560
Net Investment Income	6,722,080	6,804,286
TOTAL	<u>\$ 183,392,880</u>	<u>\$ 153,938,930</u>
Disbursements for the Year		
Refunds to Members	\$ 5,834	\$ 5,143
Medical Insurance Payments	69,577,773	165,006,322
Miscellaneous, including expenses	4,651,324	4,624,074
TOTAL	<u>\$ 174,234,931</u>	<u>\$ 169,635,539</u>
Excess of Receipts over Disbursements	\$ 9,157,949	\$ (15,696,609)
Reconciliation of Asset Balances		
Asset Balance as of the Beginning of the Year	\$ 131,614,285	\$ 147,310,894
Excess of Receipts over Disbursements	<u>9,157,949</u>	<u>(15,696,609)</u>
Asset Balance as of the End of the Year	<u><u>\$ 140,772,234</u></u>	<u><u>\$ 131,614,285</u></u>



ACTUARIAL SECTION

SCHEDULE C **Outline of Actuarial Assumptions and Methods**

The rates of retirement, disability, mortality, and termination used in the valuation were selected by the Actuary based on the actuarial experience investigation as of June 30, 2005 and adopted by the Board of Trustees on September 18, 2006. The discount rate, rates of future participation, health care cost trend rates, and expected plan costs were determined by the actuary based on plan experience.

Valuation Date: June 30, 2007

Discount Rate: 4.5% per annum, compounded annually.

Health Care Cost Trend Rates: Following is a chart detailing trend assumptions.


<u>Fiscal Year</u>	<u>Trend</u>
2008	12.0%
2009	11.0
2010	10.0
2011	9.0
2012	8.0
2013	7.0
2014	6.0
2015 & beyond	5.0

Age Related Morbidity: Per capita costs are adjusted to reflect expected cost changes related to age. The increase to the net incurred claims was assumed to be:

<u>Participant Age</u>	<u>Annual Increase</u>
65-69	3.2 %
70-74	2.4
75-79	1.8
80-84	1.3
85 & over	0.0

Anticipated Plan Participation: Representative values of the assumed annual rates of plan participation are as follows:

<u>Years of Service</u>	<u>Pre-65</u>	<u>Hired 7/1/02 and later</u>	<u>Post-65</u>	
			<u>Hired 6/30/02 and earlier</u>	
			<u>Age 65 on 12/31/ 04 and earlier</u>	<u>Age 65 on 1/1/05 and later</u>
5-9.99	25%	10%	70%	25%
10-14.99	50%	25%	80%	50%
15-19.99	75%	45%	90%	75%
20-24.99	98%	65%	98%	98%
25-25.99	98%	90%	98%	98%
26-26.99	98%	95%	98%	98%
27 or more	98%	98%	98%	98%



KENTUCKY TEACHERS' RETIREMENT SYSTEM

Separations From Service: Representative values of the assumed annual rates of death, disability, withdrawal, service retirement and early retirement are as follows:

MALES: Annual Rate of . . .							
AGE	DEATH	DISABILITY	WITHDRAWAL			RETIREMENT	
			0 - 4	5 - 9	10 +	Before 27 Years of Service	After 27 Years of Service*
20	0.003 %	0.01 %	9.00				
25	0.010	0.01	9.00	1.50%			
30	0.016	0.02	9.00	3.00	3.00%		
35	0.032	0.05	10.00	3.25	1.50		
40	0.048	0.08	10.00	3.75	1.50		
45	0.064	0.22	9.50	2.50	1.50		25.0%
50	0.104	0.42	10.00	4.00	3.00		20.0
55	0.216	0.60	11.00	3.00	2.70	6.0%	35.0
60	0.375	0.79	11.00	3.00	2.70	14.0	25.0
62	0.438	0.83	11.00	3.00	2.70	14.0	23.0
65	0.566	0.90	11.00	3.00	2.70	22.5	35.0
70	0.905					100.0	100.0

** Plus 5 % before age 55 and 15 % after age 55 in year when first eligible for unreduced retirement with 27 years of service.*

FEMALES: Annual Rate of . . .							
AGE	DEATH	DISABILITY	WITHDRAWAL			RETIREMENT	
			0 - 4	5 - 9	10 +	Before 27 Years of Service	After 27 Years of Service*
20	0.002 %	0.03 %	6.00%				
25	0.007	0.03	8.50	3.00%			
30	0.014	0.04	9.00	4.00	1.50%		
35	0.026	0.11	8.50	4.00	2.00		
40	0.044	0.22	8.50	2.50	1.50		
45	0.055	0.38	7.00	2.50	1.50		25.0%
50	0.066	0.44	8.50	3.00	2.25		20.0
55	0.085	0.56	10.00	3.50	2.50	7.5%	35.0
60	0.122	0.85	11.00	3.50	2.50	16.5	30.0
62	0.137	0.85	11.00	3.50	2.50	12.5	25.0
65	0.159	0.85	11.00	3.50	2.50	26.0	30.0
70	0.195					100.0	100.0

** Plus 5 % before age 55 and 20 % after age 55 in year when first eligible for unreduced retirement with 27 years of service.*



ACTUARIAL SECTION

Deaths After Retirement: According to the 1994 Group Annuity Mortality Table for the period after service retirement. Special rates are used for the period after disability retirement. Representative values of the assumed annual rates of death after service and disability retirement are as follows:

	Service Retirement		Disability Retirement	
	MALE	FEMALE	MALE	FEMALE
Annual Rate of Death After . . .				
45	0.1578 %	0.0973 %	6.500 %	6.500 %
50	0.2579	0.1428	10.000	10.000
55	0.4425	0.2294	10.000	10.000
60	0.7976	0.4439	9.000	9.000
65	1.4535	0.8636	10.000	10.000
70	2.3730	1.3730	6.500	4.500
75	3.7211	2.2686	7.000	6.000
80	6.2027	3.9396	10.000	6.500
85	9.7240	6.7738	12.500	7.500
90	15.2931	11.6265	15.000	17.500
95	23.3606	18.6213	23.368	31.702

Actuarial Method: Costs were determined using the Projected Unit Credit Actuarial Cost Method. The annual service cost is the present value of the portion of the projected benefit attributable to participation service during the upcoming year, and the accumulated postretirement benefit obligation (APBO) is equal to the present value of the portion of the projected benefit attributable to service before the valuation date. Service from hire date through the date of full retirement eligibility was used in allocating costs.

Assets: Market Value as provided by KTRS. Return on assets assumed to be 4.50%.

Spouse Coverage: Use actual census data and current plan elections for spouses of current retirees. For spouses of future retirees, assumed 20% of future retirees will cover spouses, with females 3 years younger than males.

Plan Costs: Assumed per capita health care costs were based on past experience and trended based on the assumptions. Following is a chart detailing retiree per capita assumptions. These amounts include medical, drug, and administrative costs and represent the amount that KTRS pays as the full contribution amount. For Post-65 retirees, the average costs shown are normalized to age 65 and then age adjusted in calculating liabilities.

<u>Years of Service</u>	<u>Average Monthly KTRS Full Costs & Contributions</u>	
	<u>Pre-65</u>	<u>Post-65</u>
CY 2004	\$376	\$274
CY 2005	\$410	\$288
CY 2006	\$476	\$304
CY 2007	\$458	\$283
CY 2008	\$484	\$278



SCHEDULE D

Summary of Main Plan Provisions as Interpreted for Valuation Purposes

ELIGIBILITY: Retiree medical eligibility is attained when an employee retires, which is possible after the completion of 27 years of service or attainment of age 55 and 5 years of service. Disabled employees, who are totally and permanently incapable of being employed as a teacher and under age 60, but after completing 5 years of service, are eligible for subsidized retiree medical coverage that is based on the number of years of service credit accrued at disability retirement. At the expiration of the disability entitlement period, the subsidy is recalculated based upon the number of years of service credit that would have accrued had the member remained active. Spouses of those actives who die while eligible to retire are eligible for retiree medical coverage when the death occurred prior to July 1, 2002.

100 Day Program: The 100 Day Program expired June 30, 2007.

CONTRIBUTIONS: The full contribution is provided to retirees with 27 or more years of service. The full contribution is determined by KTRS; the full cost is projected based on historical claims data. For retirees with less than 27 years of service, the following percentages of these full contributions are provided:

Percentage of Full Contribution Provided to Post-65 Retirees			
Years of Service	Hired Before 07/01/2002 (Age 65 by 1/1/05)	Hired Before 07/01/2002 (Age 65 after 1/1/05)	Hired After 07/01/2002
27 or more	100 %	100 %	100 %
26 - 26.99	100	100	95
25 - 25.99	100	100	90
20 - 24.99	100	100	65
15 - 19.99	90	75	45
10 - 14.99	80	50	25
5 - 9.99	70	25	10



ACTUARIAL SECTION

Effective 1/1/2008, benefits provided to pre-65 retirees and spouses who were hired before 7/1/2002 require the following monthly contributions:

Monthly Member Contributions for Single Coverage*			
Years of Service	Essential Plan	Enhanced Plan	Premier Plan
20 or more	Not offered	\$0	\$20.40
15 -9.99	Not offered	\$121.06	\$141.46
10 -4.99	Not offered	\$242.12	\$262.52
5 - 9.99	Not offered	\$363.18	\$383.58

*Additional \$16.80 monthly contribution required for smokers.

Spouses of post-65 retirees, as well as surviving spouses of deceased retirees, pay 100% of the full contribution. For spouses of active members who died while eligible to retire, prior to July 1, 2002, KTRS provides the same subsidy they would have provided to the retiree for the lifetime of the spouse, or until remarriage. For spouses of active members who die while eligible to retire July 1, 2002, or later, spouses pay 100% of the full contribution.

Retirees Receiving Health Benefits as of June 30, 2007			
	Under 65	Over 65	Total
Number	14,705	16,937	31,642
Average Age	58.9	75.0	67.5



This page intentionally left blank.